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BOTANICAL SURVEY OF GOLD FIELDS MINING CORPORATION CLAIMS ON SECTIONS 5 AND 8, T.13S., R.19E., S.B.M., QUARTZ PEAK QUADRANGLE, USGS 15 MINUTE SERIES

Final Report Prepared For:
St. Clair Research Systems

September 1982

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SECTION 1.0

INTRODUCTION

1.1.0 SCOPE OF WORK

A field search for sensitive botanical species was undertaken at the behest of Mr. Steven McCutcheon of St. Clair Research Systems on Gold Fields Mining Corporation's claims approximately five miles east of Glamis. The tract searched consisted of the south half of Section 5 and the north half of Section 8 (unsurveyed sections) of T.13S., R.19E., on the United States Geological Survey Quartz Peak, California Quadrangle, 15 Minute Series (see Figure 1). This survey was conducted in accordance with federal and state mandates the Bureau of Land Management (BLM) and County of Imperial oversees.

Field work was completed by Lorraine Pritchett, Environmental Botanist at Imperial Valley College Barker Museum, during the first two weeks of September, 1982.

1.2.0 METHODOLOGY

1.2.1 General Approach. Three basic procedures were involved in the botanical survey of the aforementioned Gold Fields Mining Corporation (GFMC) land east of Algodones Dunes. They were:

1. Accumulation of Known information on plant communities and sensitive plants through a literature and herbaria search.
2. Study of recent aerial photographs of the GFMC sections to determine terrain, vegetative densities, drainage patterns, and other pertinent features of the area.
3. A determination of search pattern, and the thorough traversing of field areas to determine floral inventory and to locate any sensitive species.

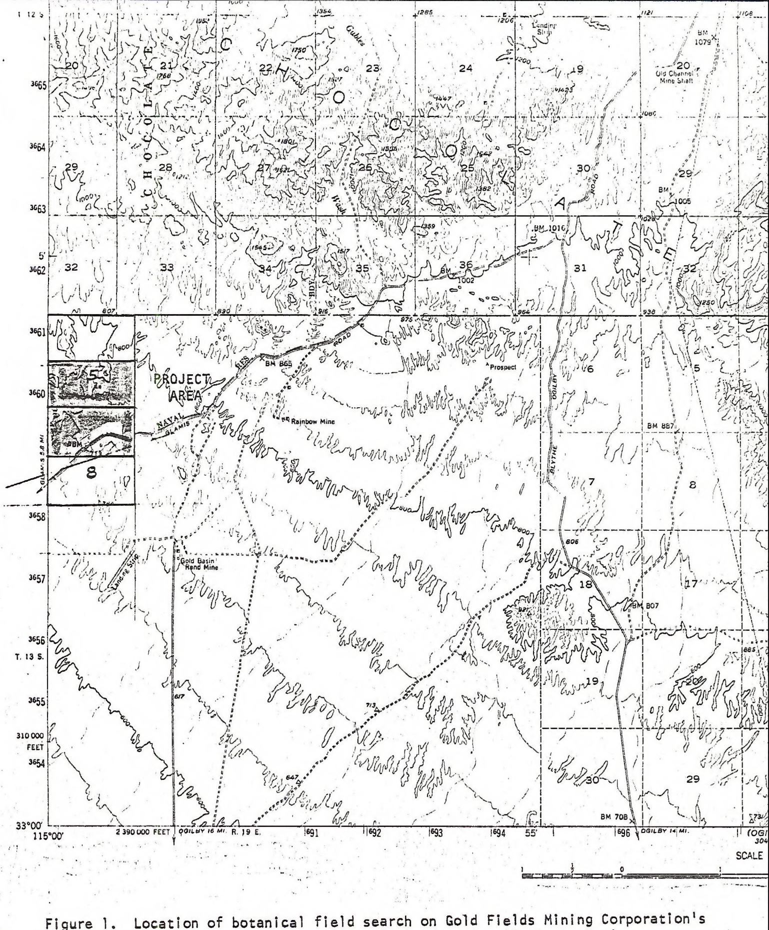


Figure 1. Location of botanical field search on Gold Fields Mining Corporation's claims. Quartz Peak, California Quadrangle, 15 Minute Series.

1.2.2 Literature and Herbaria Search. A search of pertinent literature and floral maps was conducted prior to the field search in September 1982. Herbaria consulted included the Bureau of Land Management Desert Planning Office at Riverside, the San Diego State University at San Diego, the Imperial Valley College Barker Museum in El Centro, and the Pritchett Archival Field Notes, 1974-1982.

1.2.3 Formulation of Field Survey Method. Since the area to be searched is cut by many established roads, it was decided to utilize these roads as gridding devices, and to search the areas between them extensively on foot. Recent aerial photographs, supplied by GFMC's Senior Project Geologist, Mr. Stanley N. Watowich, were used to aid in the mapping of sensitive species found.

1.3.0 DESCRIPTION AND NATURAL HISTORY OF THE AREA

1.3.1 General Location. The Imperial Valley is located geographically in the southeastern portion of the state of California. On the south it is bounded by the United States-Mexican border. The northern edge crosses the center of the Salton Sea. The valley is shaped like an elongated bowl and has a gentle slope from 0.19 to 1.75 percent toward the center. Elevation varies from about sea level at the International border to minus 230 feet at the deepest point of the Salton Sea. The valley is bound on the west by the Peninsular Ranges and on the east by the Cargo Muchacho mountains and the Colorado River.

1.3.2 Desert Features. Botanically, the Imperial Valley is a part of the Colorado Desert which is a subdivision of the larger Sonoran Desert (see Figures 2, 3, and 4). Deserts are, in part, characterized by receiving less than 10 inches of rainfall per year. Deserts in the southwestern United States are so situated as to be subjected to winds which

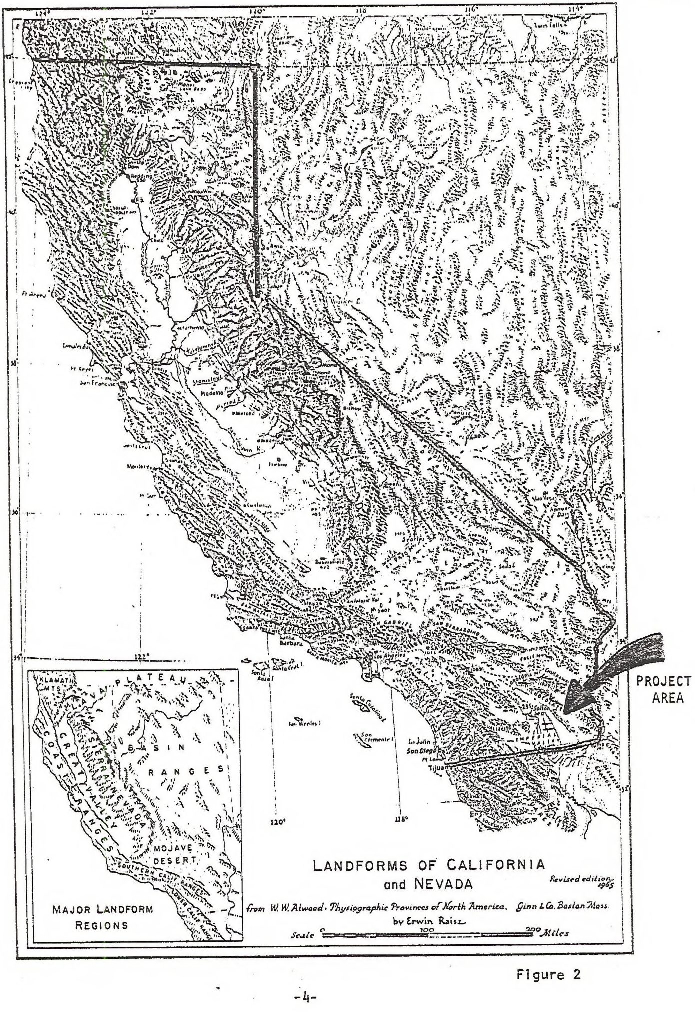
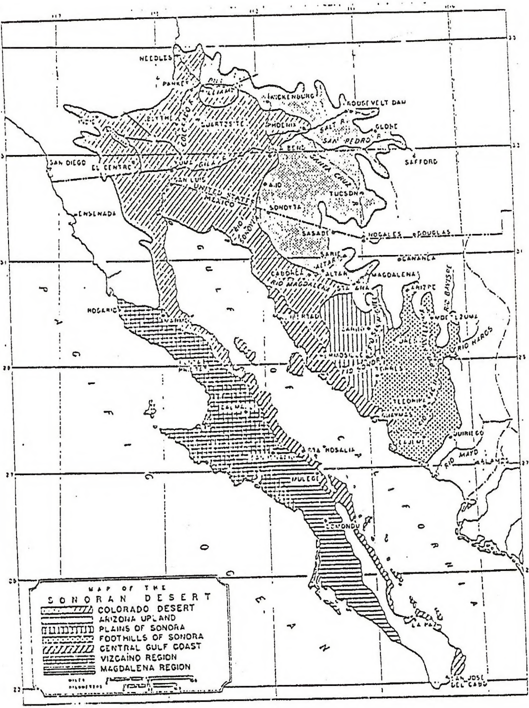

LANDFORMS OF CALIFORNIA and NEVADA
Revised edition 1965
from W. W. Atwood, Physiographic Provinces of North America. Ginn & Co. Boston, Mass.
by Erwin Raisz
Scale 0 100 200 Miles
MAJOR LANDFORM REGIONS
KLAMATH MTS
LAVA PLATEAU
BASIN RANGES
SIERRA NEVADA
GREAT VALLEY
COAST RANGES
MOJAVE DESERT
SOUTHERN CALIF. RANGES
LOWER CALIF. RANGES
PROJECT AREA
Reno
Sacramento
San Francisco
Modesto
Fresno
Bakersfield
Bishop
Las Vegas
Santa Barbara
Los Angeles
San Diego
Tijuana
Salton Sea
Santa Catalina I.
San Clemente I.
San Nicolas I.
Twin Falls
120°
118°
122°

Figure 2

THE SONORAN DESERT AND ITS VEGETATIONAL SUBDIVISIONS



(SHREVE AND WIGGINS 1964)

Figure 3

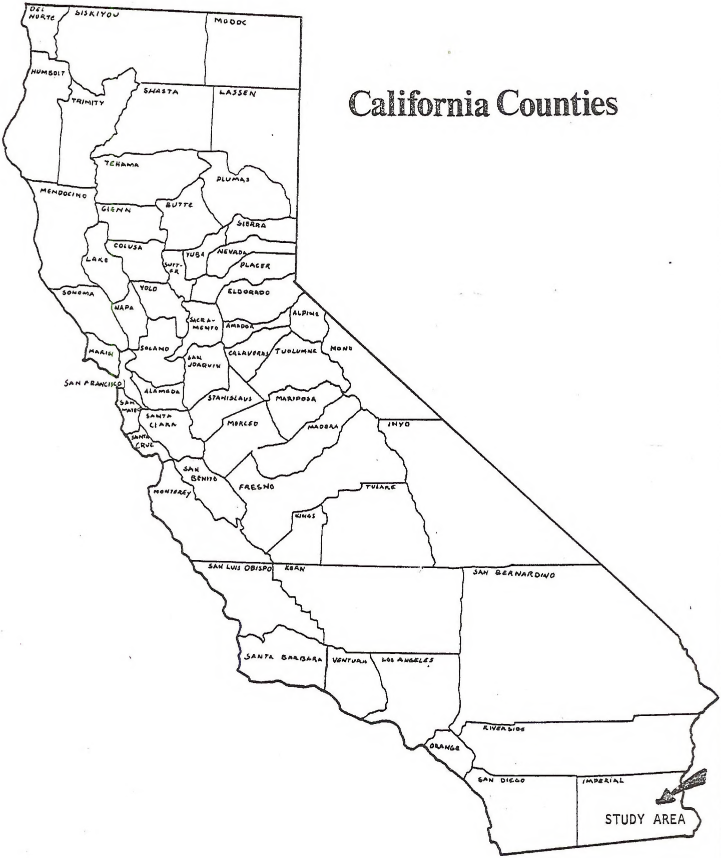

California Counties
DEL NORTE
SISKIYOU
MODOC
HUMBOLT
SHASTA
LASSEN
TRINITY
TEHAMA
PLUMAS
MENDOCINO
BUTTE
GLENN
SIERRA
COLUSA
YUBA
NEVADA
LAKE
SUTTER
PLACER
YOLO
ELDORADO
SONOMA
NAPA
ALPINE
SACRAMENTO
AMADOR
SOLANO
MARIN
CALAVERAS
TUOLUMNE
MONO
SAN JOAQUIN
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SAN MATEO
SANTA CLARA
MERCED
MADERA
INYO
SANTA CRUZ
SAN BENITO
FRESNO
TULARE
MONTEREY
KINGS
SAN LUIS OBISPO
KERN
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
RIVERSIDE
ORANGE
SAN DIEGO
IMPERIAL
STUDY AREA

Figure 4

descend from upper atmospheric cells and absorb water vapor rather than release it. These drying winds, along with the mountain barriers which create a rain shadow, function as major causes for the occurrence of deserts in the southwest (Jaeger 1965; Burk 1977). Besides little rainfall and drying winds, some other important elements of desert regions are: high temperatures (with high daily and seasonal ranges); low humidity; high soil-surface temperatures; soils which are high in salts and low in organic matter; strong winds which cause severe erosion; water erosion; sporadic streamflow; and poor subterranean drainage. Such areal characteristics are not favorable to the growth and development of vegetation.

The Sonoran desert is considered to be one of the four great North American deserts. The others are the Chihuahuan, the Great Basin, and the Mojave. These four are identified and differentiated on the basis of the natural vegetation which interacting environmental factors developed. These factors include climate, elevation, biological organisms, soils and parent materials, and topography (Pritchett 1981).

The Mojave and the Sonoran Deserts are similar in many ways. The major difference is that trees are found on the Sonoran and not on the Mojave, mainly because the Mojave Desert has higher elevation and has frequent, often prolonged, periods of winter frost which prevent arboreal establishment (Vasek 1977). The summer rainfall on the Sonoran Desert is also an important factor for tree growth there (Burk 1977).

The Colorado Desert is one of the seven vegetative divisions of the Sonoran Desert. It occupies the lower drainages of the Colorado and Gila Rivers, the Salton Basin, and some areas south of the Mexican border along the Gulf of California (see Figure 3). The Imperial Valley is in the heart of this area.

Low precipitation, high evapotranspiration, and high temperatures combine to make this area one of the most arid in North America (Burk 1977).

Records show that annual precipitation increases from the western edge of the Colorado Desert to the east. The percentage of rain falling from June through September shows the same geographic pattern. This summer rainfall, which comes mostly in the form of sudden, intense thunderstorms, does not provide as much available water for plants as would a like amount of winter rainfall. It does temporarily moderate the high summer temperatures, and thus contributed to some vegetative variation across the valley from west to east. For example, summer annuals and some species of cacti tend to abundance where soil is warm and moist at the same time. These plants are significantly more populous in the eastern portions of the desert (Burk 1977).

Because of this pattern of summer rainfall and the lack of prolonged winter frost, several tree species are present. Because summer water availability from thunderstorms is low, some tree species are limited to growth in washes and arroyos where water is plentiful (Burk 1977).

East and south of the Colorado Desert the summer rainfall increases significantly and is perhaps even more important than fall or winter rains. This difference produces an abundance of trees which is the main differentiation between the Colorado Desert and the remaining vegetative divisions of the Sonoran Desert (Burk 1977).

1.3.3 Specific Area. The study area is located on the southern half of Section 5 and the northern half of Section 8 of T.13S., R.19E., S.B.M., on the United States Geological Survey Quartz Peak, California Quadrangle, 15 Minute Series Map. The plot is cut in the southeast quarter by Highway 78. Elevations vary from hillocks which are 800 feet above sea level in the northeast corner to washes less than 713 feet in elevation.

The sections are made up of graveled terraces, some of which are boulder strewn, and large areas denuded and disturbed by previous mining activities. Test holes, drill sites, bulldozed areas, and former leaching sites abound.

Erosive patterns tend to follow contour lines on a northeast to southwest course with one large, and several moderate washes, and many runnels. Soils in the area seem to absorb or to pond rain water as shown by some ponding residues visible on the site. Fine silts and sands appear to refill smaller drainage patterns before they erode deeply.

1.4.0 VEGETATIVE ASSOCIATIONS AND SPECIE DIVERSITIES

1.4.1 Deserts and Desert Plants. As has already been discussed deserts present harsh habitats with characteristics unfavorable to the growth and development of vegetation. Desert plants have therefore undergone physiological and structural adaptations which enable them to tolerate the severe stresses that heat, drought, soil deficiencies, and wind provoke.

Some of the adaptative responses of desert plants to their harsh environment are:

1. A partial loss of leaves by evergreen species, such as Larrea tridentata (Creosote Bush), Simmondsia chinensis (Jojoba), and Atriplex ssp. (Saltbushes), which coincides with the available moisture.
2. These same species regulate other phenological events, as stem growth, flowering, and germination, to coincide with moisture abundance.
3. These and other species also regulate the amount of leaf transpiration to water abundance and can alter water loss through leaves as needed.
4. Many species limit their photosynthetic activity during stress periods and senescens on accumulated nutrients until the next rainy season.
5. Many species lose all or most of their leaves when drought stressed.
6. Others lose leaves in response to photoperiod factors and temperature variation.
7. Some taxa, such as cacti and succulents, have few or no leaves and very thick green "skins" which act photosynthetically and conserve all available moisture. Many such plants are "accordion pleated" and increase surface quickly when water is available but shrink again during drought.

8. Many species have a high soil-salt tolerance.

9. Many desert shrubs are architecturally constructed so as to hoard all available rain water and funnel it down the main stem to the root crown.

10. Many plants align their leaves perpendicularly to the ground in order to make the most of any wind stirring and to avoid heat radiating from the soil's surface.

11. Other plants have no leaves near the ground where radiated heat is the greatest.

12. Many annuals and some smaller perennials grow beneath or "within" a nurse plant which provides shade from the sun and/or protection from the drying winds.

13. Several desert plants are tan, grey, or white in color much of the hot season which cuts down on the amount of heat absorbed by their parts.

14. Some species have large tap roots which may penetrate as much as 100 ft. into the ground to reach a permanent water supply.

15. Others have shallow, much-branched root systems which extend in a large circle in all directions from the main stem in order to provide maximum quick utilization of rainfall and for stability in desert winds.

16. Many taxa have leaves and/or stems which are lightly to heavily haired. This hirsuteness provides an insulating effect from hot winds and soil surface heat.

17. Some plants, such as Larrea tridentata (Creosote Bush), produce thousands of tiny leaves that do the same food producing work as would a few large leaves, but that have the distinct advantage of having very small surfaces and thick cuticles with high stomatal resistance. These leaves both gather less heat and lose less water. (Vasek 1977; Barbour 1977; WESTEC 1977; Johnson 1974; Jaeger 1966; Munz 1968; Burk 1977; Personal observations).

Another important factore in the ecology of these desert species is that plant succession is usually absent (Shreve 1964). Some elements seen as contributing to this situation are: a lack of significant rainfall which leads to sparse growth and limited biological activity; the limited amount of plant litter produced; and the wind or flood water removal of what little plant material is deposited on the desert floor. These conditions restrict the effect that the plant community can have on the habitat. Although a few exceptions can be found, a desert plant community that has been disturbed will generally be revegetated by its formerly dominant species without passing through successional stages unless there has been some major change in the soil (Vasek 1977). The revegetation process in the desert is extremely slow. These characteristics have important implications in the prediction of project impacts.

1.4.2 Creosote Bush Scrub Community. The plants found on GFMC land surveyed are members of the Creosote Bush Scrub Community. The plants most often found in this group are: *Larrea tridentata* (Creosote Bush), *Ambrosia dumosa* (Bursage), *Fouquieria splendens* (Ocotillo), *Dalea californica* (California Dalea), *Dalea schottii* (Schott's Dalea), *Dalea spinosa* (Smoketree), *Lycium brevipes* (Frutilla), *Lycium andersonii* (Anderson Thornbush), *Hymenoclea salsola* (Cheese-bush), *Encelia farinosa* (Brittlebush), *Encelia frutescens* (Rayless Encelia), *Sphaeralsea ambigua* (Desert Mallow), *Baccharis sergiloides* (Desert Broom), *Echinocereus engelmanii* (Calico Cactus), *Opuntia bigelovii* (Teddy Bear Cholla), *Opuntia echinocarpa* (Staghorn Cactus), *Opuntia basilaris* (Beavertail Cactus), *Prosopis glandulosa* var. *torreyana* (Honey Mesquite), *Olneya tesota* (Ironwood), *Pluchea sericea* (Arrowweed), and *Chilopsis linearis* (Desert Catalpa). The last four species are generally found along water courses (Munz 1968, Munz 1974).

1.5.0 DISCUSSION OF SENSITIVE PLANTS

1.5.1 Species Sought. Pursuant to compliance with the guidelines set forth in the Endangered Species Act of 1973, a detailed study of the vegetative resources in the study area was undertaken. The thrust of the investigation was accomplished first through a literature and herbaria search and secondly through a comprehensive field search.

The literature and herbaria searches were primarily concerned with the following species:

Rare and Endangered

1. Ammobroma sonorae (Sand Food)
2. Ditaxis californica (California Ditaxis)
3. Helianthus Niveus var. tephrodes (Desert Sunflower)
4. Euphorbia platysperma (Flat-seeded Spurge)
5. Coryphantha vivipara var. alversonii (Rat-tail Cactus)

Rare but not Endangered

6. Palafoxia arida var. gigantea (Giant Spanish Needle)
7. Cryptantha Haloptera (Winged Cryptantha)

Rare in California, Common Elsewhere

8. Acacia smallii (Desert Acacia)
9. Calliandra eriophylla (Fairy Duster)
10. Croton wigginsii (Wiggins Croton)
11. Cynanchum utahense (Deboltia)
12. Pilostyles thurberi (Thurber's Pilostyles)
13. Proboscidea althaeifolia (Desert Unicorn Plant)

The categorizations shown are from the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (Powell 1980). Though there are other species considered sensitive which are found in the Imperial County, they were not significant to this study because of the area surveyed and the season of the survey. (Descriptions and characteristics of each of these sensitive species can be found in Pritchett 1981, Abrams 1960, Benson 1954, Munz, 1974). A discussion of CNPS, California Fish and Game, and Federal Registry methods of specie election may be found in the appendices. For status of species found, see chart on Page 23.

1.5.2 Conclusion. The only plants found of the sensitive species sought were Calliandra eriophylla (Fairy Duster). A rather extensive population, in excess of 300 individuals, was found in the northeast quarter of the north half of Section 8 (see Figure 5). No other rare, threatened, or endangered species were encountered in the study area.

SECTION 2.0
RESULTS

2.1.0 GENERAL FIELD OBSERVATIONS

The dominant specie in the study area, though it is Creosote Bush Scrub Community, is not Larrea tridentata (Creosote Bush). Because of the extensive previous destruction (by mining operations) of the area, the bulk of the plant population exists along and in the washes and runnels. The predominant specie is Olneya tesota (Ironwood), with rather large numbers of Cercidium floridum (Palo Verde), Lycium andersonii (Anderson Thornbush), Hyptis emoryi (Desert Lavendar), and Acacia greggii (Catclaw Acacia) also present. The general appearance of the plant community was unexceptional for the area and season. Plants on the terrace were quite desiccated; many were almost totally leafless, but this is the normal condition of many plants at the end of the summer. Plants at the edges of washes and in previously ponded areas were more vigorous and verdant due to having received additional moisture. The skeletal remains of several spring and early-summer annual species are still to be found.

No valid conclusions about natural growth patterns or relative abundances could be reached due to the immense amount of disturbance to the terrain. Isolated individuals of several forbs, shrubs, and cacti were found. The inventory and condition of these species are shown on the chart on Page 24. Specimens found, except those in washes or pondings, were generally desiccated, and of less than expected stature and vitality. This may be the result of the disturbed runnel patterns or only because of the season of survey. Specie diversity was consistent with that expected for the area.

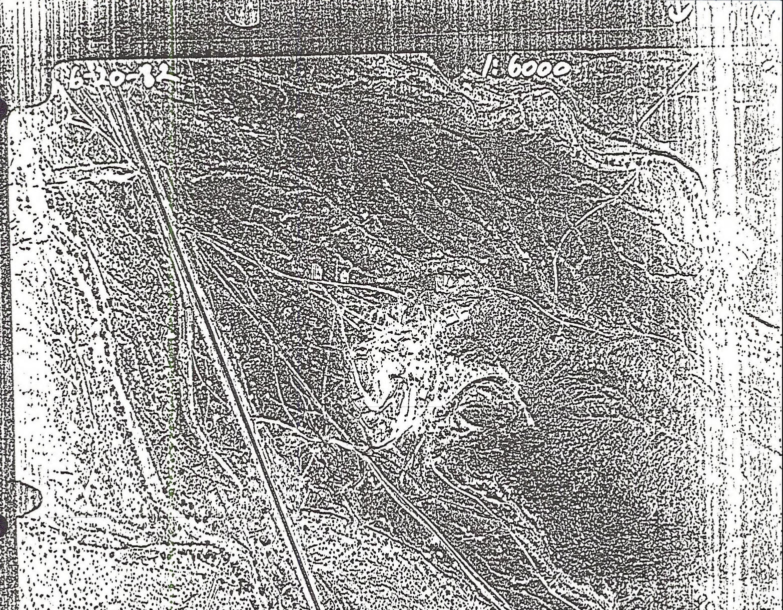


Figure 5

← N

2.1.1 South Half of Section 5. Elevation varies from 800 feet in the northeast corner of the southern half of Section 5 to less than 720 feet in the southwest corner and in the washes. Several large washes transect the area along northeast to southwest lines. To a great extent medium-sized washes and particularly runnels have been disturbed by previous mining operations so that normal drainage patterns no longer exist. Major plant populations occur in these washes both because additional water is available and because these are the only relatively-undisturbed areas in the study plot. Most of the rest of the section is riddled with test-holes, drill-sites, assay-swathes, and former sites of leaching operations. Here and there in undisturbed areas original vegetative communities persist, and in some disturbed areas revegetation has started. There are some fine cacti specimens in the northern less-disturbed portion of the tract. At the former leaching sites, chemical pollutants must have been contained or had extremely minimal spillage since revegetation is occurring. In some instances new plants were found sprouting around drill sites where water had escaped during drilling operations. A hundred or more Olneya tesota (Ironwood) seedlings were observed in these areas.

No sensitive plants were found on this half section.

2.1.2 North Half of Section 8. The portion of Section 8 that is north of Highway 78 corresponds greatly to Section 5 and the remarks made above are pertinent to this area also. Elevation on this portion of the study area varies from less than 713 feet (in washes below the benchmark) at about the middle of the section to a height of about 740 feet on the hill in the southeast corner of the north half of Section 8. Drainage patterns are from northeast to southwest, more or less along contour lines. The portion of this section which is south of the highway, however, is less disturbed although there has been some activity on it in the past. Although several roads bisect the area and the hill has been disturbed by mining operations, the normal drainage runnels remain intact. Most vegetation is in these runnels because of the additional moisture found there. General plant occurrences and specie distributions are much the same as on Section 5, with the exception that an extensive population of Calliandra eriophylla (Fairy Duster) was found in the runnels from the southeast corner to the midpoint of the northern half of Section 8 (see Figure 5). At the time of the first field studies these plants were still largely summer senescent, showing few or no leaves and with bark ashen-gray to white in appearance. Such plants would probably have been dismissed as detritus from last year's annuals by one unfamiliar with desert-plant summer dormancies or unskilled in specie-differentiation from skeletal remains. Testing of branchlets proved them to be resiliant and viable despite their dead appearance. During the second week of field work there was a heavy rainfall in the area. Within four days the Calliandra had begun to leaf out and many individuals had regained their characteristic bark color. Such is the amazing tenacity and resiliency of desert-adapted flora.

SECTION 3.0

CONCLUSIONS

3.1.0 PLANT ASSOCIATIONS AND DISTRIBUTIONS

The plant associations found on the GFMC site were those of the Creosote Bush Scrub community even though there were fewer Larrea than might be expected, because of the deranged drainage patterns. Size, vigor, and specie distribution was consistent with the area, the season, and weather conditions.

3.2.0 IMPACT OF EXISTING MINING OPERATIONS

As has been discussed, vegetation is most disturbed in the southern half of Section 5 and in the most northern portion of Section 8. No rare, threatened or endangered species were found in these areas however.

Existing mining has not harmed the population of Calliandra eriophylla found on the southeastern quarter of the northern half of Section 8. The population is confined to existing runnels and it appears that damage to the plants has been avoided thus far. This specie is "of management concern" in the Bureau of Land Management's desert conservation plan.

3.3.0 POTENTIAL IMPACTS OF FUTURE MINING OPERATIONS

The three main areas of concern in relation to mining operations on this study area are: The mechanical destruction of individuals and habitat of sensitive plant species, and the release of pollutants into the environment that would jeopardize these sensitive species.

Present proposed sites of excavation, ore storage, and ore processing are in areas in Section 5 which have already been disturbed by previous mining and in which there are no sensitive species. Since past chemical treatment areas appear to have been adequately contained (ie, no noticeable damage to soil has occurred, nor is there an absence of revegetation in and around these sites, nor are new plants stunted or otherwise deformed) like measures in future projects should prove ample for the protection of vegetative resources.

Any future plans for activity on Section 8 south of Highway 78 must necessarily address alternative methods of protecting and preserving the Calliandra eriophylla (Fairy Duster) community found there, since mitigation by transplanting is not feasible due to the extent and density of the population and the fragility of the specie's root system. Perhaps fencing of these waterways is the best mitigation possibility.

SECTION 4.0

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SECTION 5.0

APPENDICES

5.1.0 CRITERIA FOR SENSITIVE SPECIES

5.1.1 Sensitive Plants-Federal Registry Criteria. The Federal Endangered Species Act of 1973 defines Endangered Species as those which are in danger of extinction throughout all or a significant portion of their range. These species may be endangered because of the destruction, drastic modification, or severe curtailment of their habitat, or because of over-exploitation, disease, or even for unknown reasons. Species that occur in very limited areas, such as those known only from their type locality or those which grow in restricted fragile habitats, usually are considered endangered. Threatened species are those which are likely to become Endangered within the forseeable future throughout all or a significant portion of their range (Pritchett 1981).

5.1.2 Sensitive Entities-California Dept. of Fish and Wildlife. The California Department of Fish and Game has issued a report on Rare or Endangered fish and wildlife (chart designation CDFW) in the state. It lists the following criteria:

Endangered (one or more of the following)

1. The mortality rate consistently exceeds the birthrate.
2. It is incapable of adapting to environmental change.
3. Its habitat is threatened by destruction or serious disturbance.
4. Its survival is threatened by the unwanted introduction of other species through predation, competition, or disease.
5. Environmental pollution threatens its survival.

Threatened (one or more of the following)

1. It is confined to a relatively small and specialized habitat, and is incapable of adapting to different environmental conditions.

2. Although found in other parts of the world, it is nowhere abundant.

3. It is so limited that any appreciable reduction in numbers, range, or habitat would cause it to become Endangered.

4. If current management and protection programs were diminished in any degree, it would become Endangered. (CDFG 1979).

5.1.3 Sensitive Plants - California Native Plant Society. The California Native Plant Society categorized Threatened and Endangered Plants by means of these four components: Rarity, which addresses the extent of the plant, both in terms of numbers of individuals and the nature and extent of distribution; Endangerment, which embodies the perception of the plant's being threatened with extinction, for whatever reason; Vigor, which speaks to the number of individuals through recent time; and Distribution, which focuses on the general range of the plant.

These four elements form the R-E-V-D Code. Each of these elements is divided into degrees of concern which is designated by the number 1, 2, or 3. In each case, the higher the number the more critical is the concern.

The system is summarized as follows:

R (Rarity)
  1. Rare, but found in sufficient numbers and distribution widely enough that the potential for extinction or extirpation is low at this time.
  2. Occurrence confined to several populations or to one extended population.
  3. Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)
  1. Not endangered.
  2. Endangered in a portion of its range.
  3. Endangered throughout its range.

V (Vigor)
1. Increasing or stable in number.

2. Declining in number.

D (Distribution)
1. More or less widespread outside California.

2. Rare outside California.

3. Endemic to California.

The CNPS inventory contains four lists. List 1 deals with plants that are presumably extinct; List 2 treats plants that are very rare or rare, most of which are also endangered; List 3 are those that are rare, but not endangered; and List 4 presents the plants that are rare in California, but known more widely outside the state (Powell 1980).

The current R-E-V-D assessments of the sensitive species sought are:

	List	R-E-V-D
Acacia smallii	4	3-3-3-1
Ammobroma sonorae	2	2-2-2-2
Calliandra eriophylla	4	3-1-1-1
Coryphantha vivapara var. *alversonii*	2	2-2-2-3
Croton wigginsii	4	2-2-1-1
Cynanchum utahense	4	1-1-1-1
Cryptantha haloptera	3	1-1-1-2
Ditaxis californica	2	2-2-2-3
Euphorbia platysperma	2	3-2-2-2
Helianthus niveus var. *tephrodes*	2	3-2-2-2
Palafoxia arida var. *gigantea*	3	1-1-1-2
Pilostyles thurberi	4	1-1-1-1
Proboscida althaeifolia	4	2-1-1-1

(Powell 1980)

5.1.4. Sensitive Plants. Of the thirteen plants which are considered Rare, Threatened, or Endangered by the California Native Plant Society (CNPS), five are found on the National list as Endangered and two are listed as Threatened. The rest have not been given a status designation on the Federal Registry. The R-E-V-D code used by CNPS is shown in Section 5.1.3. The Status Chart of Sensitive Plants is shown immediately following.

STATUS OF SENSITIVE PLANTS

	1976 USFW			
NAME	Proposed Endangered	Proposed Threatened	1979 CDFW	1980 CNPS
Ammobroma sonorae	X			X
Acacia smallii				X
Calliandra eriophylla				X
Coryphantha vivapara var. *alversonii*		X		X
Croton wigginsii	X		X	X
Cynanchum utahense				X
Crypthantha haloptera				X
Ditaxis californica		X		X
Euphorbia platysperma	X			X
Helianthus niveus var. *tephrodes*	X			X
Palafoxia arida var. *gigantea*	X			X
Pilostyles thurberi				X
Proboscida althaeifolia				X

(Powell 1980; USFW 1976; CDFG 1979)

FLORAL INVENTORY OF GOLD FIELDS MINING CORPORATION SITE

September 1982

Specie	Status
Acacia greggii (Catclaw Acacia)	E
Ambrosia dumosa (Bursage)	E/D
Bebbia junca aspera (Sweetbush)	E/B/D
Brandegia bigelovii (Brandegea)	E
Calliandra eriophylla (Fairy Duster)	E
Cercidium floridum (Palo Verde)	E/B
Chilopsis linearis (Desert Catalpa)	E
Chorizanthe rigida (Rigid Spiny Herb)	D
Cryptantha angustifolia (Forget-Me-Not)	D
Datura discolor (Sacred Datura)	E/D
Distichlis stricta spicata (Saltgrass)	E/F/D
Ditaxis serrata (Saw-toothed Ditaxis)	E
Echinocactus polycephalus (Cottontop Cactus)	E
Echinocereus engelmannii (Calico Cactus)	E
Encelia farinosa (Brittlebush)	E/D
Euphorbia polycarpa (Sandmat)	E/D
Fagonia chilensis laevis (Fagonia)	D
Fouquieria splendens (Ocotillo)	E
Eriogonum reniforme (Kidney-leaved Buckwheat)	E/D/B
Hymenoclea salsola (Cheesebush)	E/D
Hyptis emoryi (Desert Lavendar)	E/B
Krameria grayi (Krameria)	E/D

Floral Inventory (continued)

Specie	Status
Larrea tridentata (Creosote Bush)	E/D
Lycium andersonii (Anderson Thornbush)	E/D
Mirabilis bigelovii retrorsa (Wishbone bush)	E
Olneya tesota (Ironwood)	E
Opuntia basilaris (Beavertail Cactus)	E
Opuntia bigelovii (Jumping Cholla Cactus)	E
Opuntia echinocarpa (Buckhorn Cholla Cactus)	E
Opuntia ramosissima (Darning Needle Cholla Cactus)	E/D
Phoradendron californicum (Desert Mistletoe)	E/D
Physalis crassifolia (Groundcherry)	E
Prosopis juliflora glandulosa (Honey Mesquite)	E
Simmondsia californica (Jojoba)	E
Tamarix pentandra (Tamarisk)	E

Key

E = Extant, but not blooming or fruiting
B = Blooming
F = Fruiting
D = Dried, extremely desiccated, or only skeletal remains

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